Austin Peay Bridge
State Route 56 Spanning the Cumberland River
Gainesboro
Jackson County
Tennessee

HAER No. TN-28

PHOTOGRAPHS

WRITTEN HISTORIC AND DESCRIPTIVE DATA

Historic American Engineering Record
National Park Service
Southeast Region
Department of the Interior
Atlanta, Georgia 30303

HAER
TENN
44-GABO,
1-

HISTORIC AMERICAN ENGINEERING RECORD

AUSTIN PEAY BRIDGE

HAER No. TN-28

Location:	State Route 56 spanning the Cumberland River (Log Mile 10.96) at the north city limits of Gainesboro, Jackson County, Tennessee U.S.G.S. 7.5 minute Gainesboro (325 SW) and Whitleyville (325 NW) Tennessee Quadrangles, Universal Transverse Mercator Coordinates: 16 620900 4025960 and 16 620820 4026440
Construction Date:	1926-28
Builder:	Montgomery and Parker, Rockport, Indiana
Present Owner:	Tennessee Department of Transportation Suite 700, James K. Polk Building 505 Deaderick Street Nashville, Tennessee 37243-0349
Present Use:	Vehicular Bridge
Significance:	The Austin Peay Bridge is the only known extant K-truss in the Federal Highway Administration's Southeast Region. The bridge also is historically significant for its associations with the early development of Tennessee's Highway Department.
Report Prepared By:	Jeffrey L. Durbin Historic Preservation Specialist Tennessee Department of Transportation Environmental Planning Office Suite 900, James K. Polk Building 505 Deaderick Street Nashville, Tennessee 37243-0334 (615) 741-5363
Date:	May 6, 1991

Erected between 1926 and 1928, the Austin Peay Bridge is located over the Cumberland River near Gainesboro, the Jackson County seat of government. A through (or high) steel truss bridge, the structure connects the town with communities such as Whitleyville which lie north of the Cumberland River. Though it is adjacent to the north city limits of Gainesboro, the setting of the bridge site is rural. The south end of the bridge stands on a steep and wooded bluff above the river. The north end of the truss bridge is connected to a viaduct spanning the floodplain of the river. This floodplain is cultivated during the spring and the summer. Constructed during a period of expansion for the Tennessee Department of Highways and Public Works, the chief significance of the bridge is its engineering. The Austin Peay Bridge is the only K-truss bridge known to remain in the Federal Highway Administration's southeast region.*

Though the State Highway Department had begun studying the replacement of ferry crossings on Tennessee rivers with vehicular traffic in 1916, a local resident, Luke Quarles, lobbied the State for the construction of a bridge over the Cumberland River near Gainesboro. These efforts bore fruit on June 11, 1926 when officials of the recently reorganized Department of Highways and Public Works awarded the contract for State-Aid Project Number 335-A to Montgomery and Parker of Rockport, Indiana. For $219,615.74, the contractor agreed to build the three truss spans of the bridge in 250 working days. The state would construct the approaches to the bridge at a cost of $38,413.91. By the fall of 1926, the two piers on the south bank of the Cumberland River were in place and construction of the first of the bridge's three truss spans could begin.

On March 30, 1927, the Jackson County Sentinel reported that construction of the bridge was "progressing satisfactorily. The wooden trestle across [the floodplain] on the north side is being built [and] preparations to put up the first span of steel on the south side [of the river] are under way." In early June, the newspaper noted that high water had delayed erection of a pier on the north side of the Cumberland River, but "other work was progressing satisfactorily." By the end of the month both the steel span on the south side and the wooden trestle on the north bank of the river were mostly completed, but work on the north pier was only beginning.

---

*In 1983 Department historians checked with other State Highway Departments in the Federal Highway Administration's southeast region to determine if there were any other vehicular K-trusses in these States. This informal survey did not locate any other K-trusses. Further research since then in these states may have located such trusses.

In August 1927, the Nashville Bridge Company* was assembling the large steel K-truss which it had fabricated, and the Highway Department began constructing the approaches to the bridge. A tragedy on Thanksgiving Day 1927 marred the steady progress achieved in building the bridge when one of the steelworkers fell to his death. According to the Jackson County Sentinel, E. G Morrell "was heating rivets and tossing them overhead to co-workers when he slipped from a girder and fell ninety feet to the river." The bridge worker's death underscored the hazards in constructing a large bridge high above a swift current, but it did not slow the completion of the structure. Less than six months later the deceased man's fellow workers had poured the concrete deck on the main truss.

In the spring of 1928, Montgomery and Parker had completed the bridge's truss spans at a total cost of $227,597.62. Though the Jackson County Sentinel reported on April 11, 1928 that the new structure was "opened to traffic," the state did not finish the approaches until June 6. Before its completion of the bridge, the Highway Department agreed to the request of the Civitan Club to name the structure in honor of the recently deceased governor of Tennessee, Austin Peay, who had initiated an ambitious program of highway construction in the state earning him the nickname "The Road Building Governor."

The state held its formal dedication of the Austin Peay Bridge on June 16, 1928. Among the speakers at the dedication ceremony were Governor Henry Horton and nationally recognized World War I hero Alvin C. York. Three days before the ceremony, the Jackson County Sentinel published the program of the four-hour event and a solemn poem praising the new bridge:

AUSTIN PEAY BRIDGE

By Clara Cox Epperson

Arched proudly above the Cumberland
With wide shining driving expanse;
Towering columns, standing erect,
Beauty and majesty enhance,
Lovely scenery greets the eye,
Up the winding river, or down;
The hills clustering along the banks
Bedecked in an emerald gown

*Apparently the Nashville Bridge Company served as a subcontractor to Montgomery and Parker.

Smile on this work of man's hand that gives
An outlet to highways that run
From the mountain roads of the east
To the valleys of the setting sun,
That brings a commerce with the world
As swift travelers come and go.
They view our hills and limpid streams,
And at last hidden beauties know.
Then hail to you, O bridge that leads
To life's wondrous, new ecstasy,
Gem of the memorial crown
Of our Governor-Austin Peay.

The people of the Upper Cumberland region of the State as well as the author of the poem understood the economic importance of the bridge. Besides shortening the distance between Louisville, Kentucky and Chattanooga by 100 miles, the Austin Peay Bridge tied upper Cumberland towns such as Gainesboro and Cookeville to an expanding transportation network. On June 21, 1928, the Lebanon Democrat reported on the formal opening of the bridge and suggested that the project was only the beginning of many much-needed improvements to the region. The newspaper wrote that:

> The new span...marks a definite point in the highway development for the entire north-middle Tennessee section which for various reasons has not been as well blessed with roads and bridges and such things as have other regions...of Tennessee...

The Lebanon newspaper also specifically identified those Upper Cumberland counties that were ripe for further transportation projects.

> Weeks before the dedication, folks over in Fentress County planned to make their way over muddy, rutty, rocky roads to congratulate Jackson County upon the huge concrete and steel bridge over the muddy Cumberland. Folks in Overton County, adjacent to the east but not an easy journey away by any means, had also planned to make the pilgrimage. Putnam and Smith Counties to the south and Trousdale and Wilson Counties to the west, also knew of the dedication and realized what it meant, not only for Jackson County, but for them. As for Clay, Pickett, Macon and Sumner Counties, they, too, will benefit by the bridge; they, too, realized that the days of slow ferries on main

> highways is fast passing from the highland neighborhood; they, too, planned to make the Gainesboro function a celebration of the whole north country.

Quite clearly, the writer of the Lebanon newspaper article perceived that major improvements such as the Austin Peay Bridge were vital to the aspirations and prosperity of the entire region.

Although the Austin Peay Bridge was a major concern to the people of the Upper Cumberland area, its primary historical significance is through its associations with the early development of Tennessee's Highway Department. Formed in 1915 as the State Highway Department, this agency was reorganized as the Department of Highways and Public Works in 1923. With this reorganization came the infusion of large sums of federal money. These funds enabled the Department to embark upon a massive bridge building effort between 1927 and World War II. Prior to this time, the State had undertaken few bridge projects. Hence, the Austin Peay Bridge represents a transition period for the department.* Furthermore, its composition as well as its date of construction reflect the shift from county to state leadership in bridge building. Like the Cunningham Bridge, which was built near Clarksville in 1922-25, the Austin Peay Bridge is a heavy, riveted Pratt derivation. Each of these bridges were built at a time when county governments funded the construction of lightweight, pin-connected structures. The Tennessee Department of Highways eventually built bridges that were more standardized than its early structures such as this bridge. Later structures would be uniform in width, composition of members, and truss type. Both the Cunningham Bridge and the Austin Peay Bridge were narrower than these later bridges and employed truss types, such as the K-truss, not commonly used in Tennessee after 1925.

The primary engineering significance of the Austin Peay Bridge is related to the rarity of its main truss, the K-truss.

---

*In general, the Tennessee Highway Department utilized federal funding for the State's primary highways including State Route 1, the Memphis to Bristol Highway. However, the introduction of these funds in the State also enabled the Department to use State monies to construct its secondary route system and to build structures such as the Austin Peay Bridge in less-populated areas of Tennessee.

This truss type was used only for a short time in the early twentieth century. Recommended only for longer spans, its name is derived from the distinctive arrangement of its members which could be reversed. In this variation of the Pratt truss, the diagonals and counters between the verticals are replaced with diagonal compression members which extend from the midpoint of the vertical to the top and end chords at the connection, creating a K appearance. Such an arrangement of members allowed tall verticals which increased the truss's overall height (and length) while breaking the height of the vertical allowing it to be stiffer and to resist stresses more efficiently.

In describing the K-truss design, one bridge engineer stated it could be used for longer spans and could be used in place of the Petit truss. He admitted, however, that one of the disadvantages of the K-truss was the difficulty in designing the end panels. A true K-truss has vertical end posts which posed problems in distributing stresses. Some bridge designers solved this problem by using inclined end posts. The Austin Peay Bridge has such end posts and is therefore a modified rather than pure example of the K-truss design.

Another drawback to the K-truss was the large number of members in the truss. The greater the number of individual members in a truss, the greater the likelihood of mistakes in fabricating the steel members in the shop and of errors in erecting the bridge in the field. Also, a larger amount of metal would increase the cost of a bridge thus making the Parker truss (with its more simplified design) more cost effective for many bridge lengths than the K-truss. For whatever reasons, the K-truss was not often used and relatively few examples remain.

Rather than using a true K-truss, some designers incorporated the K configuration into the central panels on other truss types which probably combined the advantages of both truss types. While thirty-two of these hybrid K-trusses have been found in the State, only two of the K-truss design bridges are known to have been built in Tennessee: the Cunningham Bridge in Clarksville, which was demolished in 1986, and the Austin Peay Bridge.

The Austin Peay Bridge contains twenty-six spans and is 1690.5 feet in length. The three river spans are riveted through steel truss spans. The main channel span is a 280-foot K-truss. The shorter flanking trusses are 160-foot Warrens with verticals and polygonal top chords. On the southern end of the bridge are two 28.5 foot concrete deck girder spans. On the northern end

are twenty-three 53-foot concrete deck girder spans on concrete bents. These northern spans replaced the bridge's original thirty-nine timber approach spans which were destroyed by a fire on January 21, 1941.*

The bridge sits on a scored concrete substructure. River piers are of the pedestal design. The structure has a curb-to-curb width of 18.0 feet and an out-to-out width of 21.3 feet. The composition of members is typical for the period. While there may be some variations, the descriptions below are generally true. The top chords and end posts are channels with lacing, the bottom chords are channels with battens, and the verticals are I-beams or channels with lacing as are the diagonals and counters. The minimum vertical clearance is 14.0 feet. The K-truss is 36 feet at its tallest point and each flanking truss is 28 feet in height at its tallest point. Each truss span contains a metal lattice railing; the girder spans contain a spindle concrete railing.

The Tennessee Department of Transportation in cooperation with the Tennessee State Historic Preservation Office is currently conducting a State-wide survey of metal truss bridges to determine which are potentially eligible for the National Register of Historic Places. Both agencies agree that the Austin Peay Bridge is eligible under National Register Criterion "C" as a rare truss type.

---

*The State awarded the contract for State Aid Project Number 335-A (Reop.) to A. B. Long on April 18, 1941. The contractor completed the project to reconstruct the north approach on April 21, 1942 at a cost of $130,687.37. Aside from patching of the concrete deck, the new north approach to the bridge is the only alteration to the structure.

BIBLIOGRAPHY

Carver, Martha et al.
Tennessee Department of Transportation Historic Bridge Survey. Unpublished manuscript on file, TDOT, Nashville, nd.

Jackson County Sentinel, 16 June 1926, 30 March 1927, 20 April 1927, 1 June 1927, 8 June 1927, 29 June 1927, 13 July 1927, 17 August 1927, 30 November 1927, 4 April 1928, 7 April 1928, 11 April 1928, 18 April 1928, 6 June 1928, and 13 June 1928.

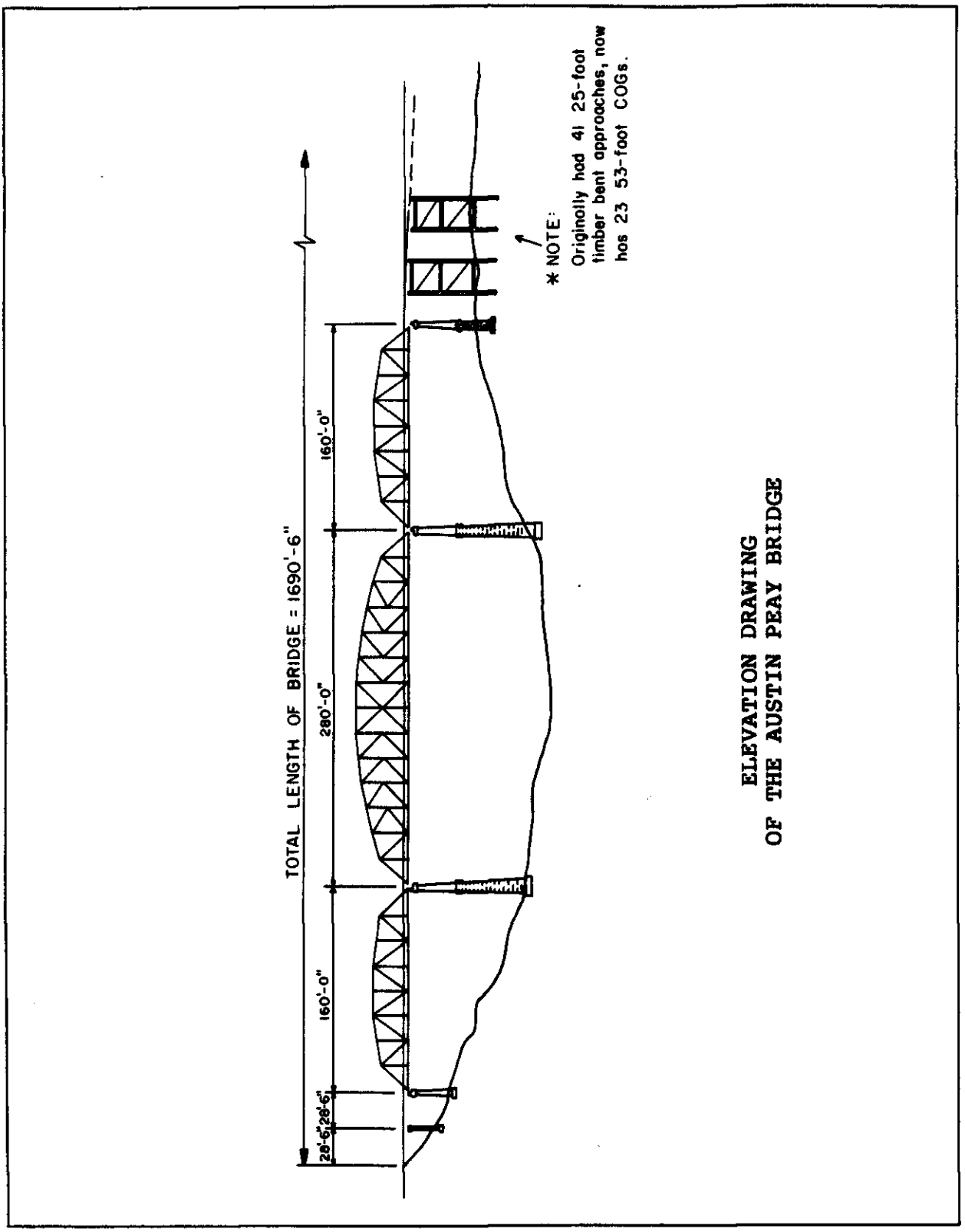
Lebanon Democrat, 21 June 1928.

Report of the State Highway Commissioner of Tennessee for the Biennium Ending. Nashville, 1943.

U. S. Army Corps of Engineers, "1930 Cumberland River Survey, Drawing Number 5683." Nashville: U.S. Engineer Office, 1931.

U.S.G.S. "Gainesboro, Tennessee," Quadrangle. 1968 edition, photorevised 1979.

------ "Whitleyville, Tennessee," Quadrangle. 1968 edition, photorevised 1979.



ELEVATION DRAWING
OF THE AUSTIN PEAY BRIDGE